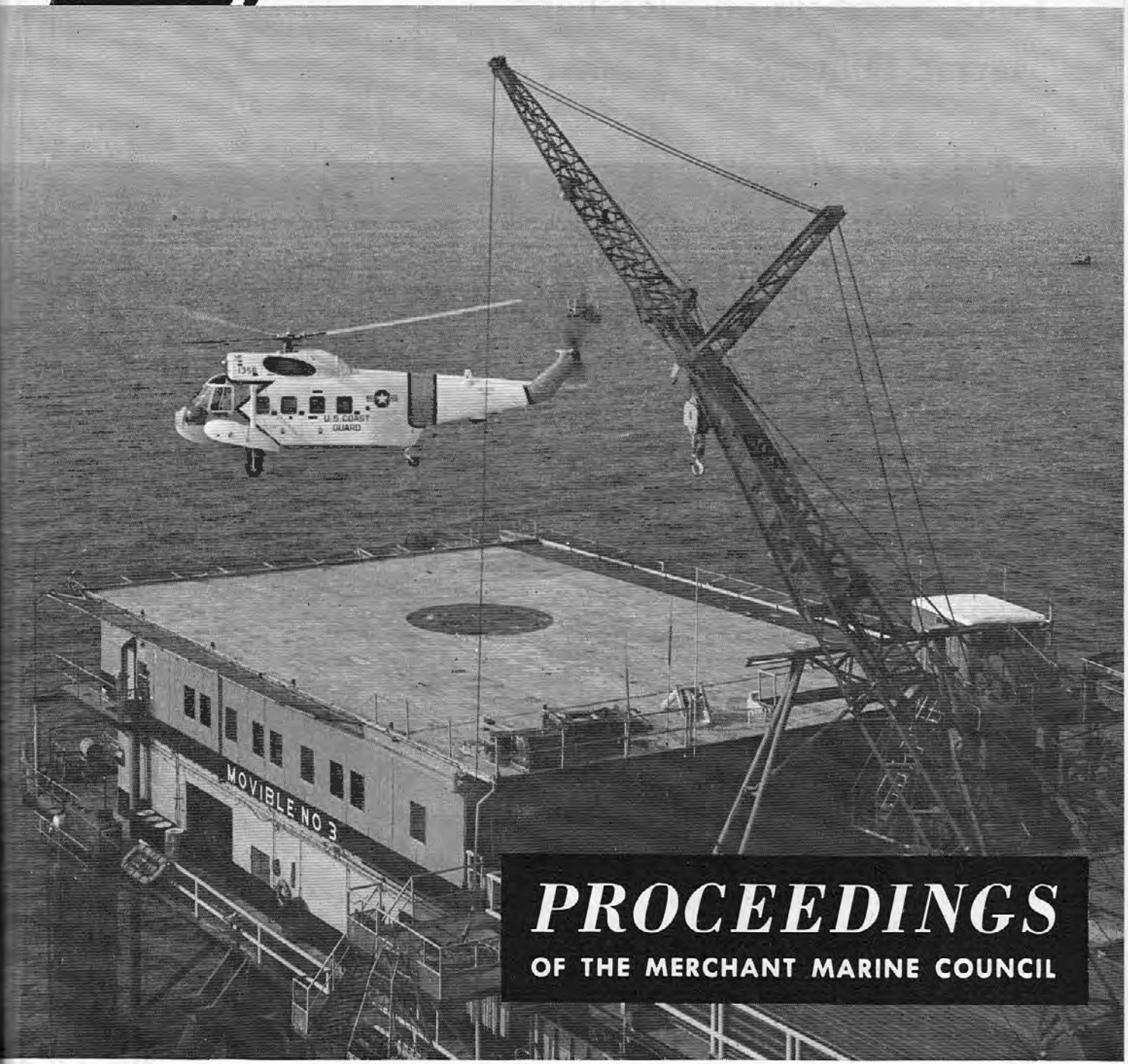
COAST GUARD



PROCEEDINGS

OF THE MERCHANT MARINE COUNCIL

Vol. 26, No. 10 CG-129 October 1969

IN THIS ISSUE . . .

Shipboard Fire and Safety Test Facility Dedicated . . .

Issue Numbers on Merchant Marine Officers' Licenses . . .

Continental Oil Rig 43A Gulf of Mexico . . .

THIS COPY FOR NOT LESS THAN 20 READERS—PLEASE PASS IT ALONG

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FRONT COVER: A U.S. Coast Guard HH–52A amphibious rescue helicopter alights on the helicopter port atop a commercial oil rig off the coast of Louisiana.	
BACK COVER: "No ifs, ands, or Butts, Please." *Courtesy Imperial Oil Fleet News.*	

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PROCEEDINGS

OF THE

MERCHANT MARINE COUNCIL

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PROPOSED RULEMAKING

Certification of Cargo Containers for Transport Under Customs Seal

The Commandant, U.S. Coast Guard, under authority of Executive Order 11459 of March 7, 1969 (34 F.R. 5057), and the delegation of authority in 49 CFR 1.4(a)(6) (34 F.R. 9988) is considering the addition of a new Chapter IV to Title 49 Code of Federal Regulations, to implement the provisions of the Customs Convention on the International Transport of Goods Under Cover of TIR Carnets (TIR Convention), done at Geneva on January 15, 1959 (TIAS 6633), and the Customs Convention on Containers, done at Geneva on May 18, 1956 (TIAS 6634).

The benefits of the TIR Convention and the Customs Convention on containers will be available to users of containers which have been approved and certificated in accordance with these proposed regulations. By obtaining approvals and certificates for containers moving in international transportation, users can expect that movement through intermediate Customs points will be facilitated when shipped with the appropriate Customs seals and documentation. The proposed regulations are concerned with the security of containers rather than their structural safety.

Interested persons are invited to submit written data, views, arguments, or comments regarding the proposed new chapter to the Commandant (CMC), U.S. Coast Guard, Washington, D.C. 20591. Commnnications received on or before October 15, 1969, will be considered before final action is taken on the proposal.

In addition to publication in the Federal Register, of September 4, 1969, copies of this document will be mailed to persons and organizations who have previously requested that they be furnished with copies of proposed changes in the regulations. Also, copies of the printed document will be furnished upon request to the Commandant (CMC), as long as they are available. Copies will in any event be available for examination at the office of the Commandant (CMC), as well as at the offices of the Coast Guard District Commanders.

No hearing is contemplated on the proposal in this document. However, arrangements may be made for informal conferences with cognizant Coast Guard personnel by contacting Commandant (CMC), room 4211, U.S. Coast Guard Headquarters, Washington, D.C. 20591. Any data or views presented during such informal conferences should also be submitted in writing in accordance with this notice, in order to become a part of the record.

Each communication received within the time specified will be fully considered and evaluated before final action is taken on the proposal in this document. Copies of all written communications received will be available for examination by interested persons in room 4211, U.S. Coast Guard Headquarters, Washington, D.C., both before and after the closing date for the receipt of comments. The proposal contained in this document may be changed in the light of the communications received. Communications received will not be acknowledged. ⚓

A plaque dedicated to the memory of Charles A. Culver, one of the pioneers of the fire test facility concept, is unveiled. Participating in the ceremony are, from the left: RADM Chester A. Richmond, Mrs. Charles A. Culver, RADM Charles P. Murphy, and the Honorable Lambert C. Mims. The inscription on the plaque reads as follows: "Dedicated to the memory of CHARLES A. CULVER by the U.S. Coast Guard in appreciation of his work in the field of marine fire protection U.S.C.G. ship fire and safety testing facility". This plaque will be a permanent part of the facility site.

SHIPBOARD FIRE AND SAFETY TEST FACILITY DEDICATED

Dale E. McDaniel
Hull Arrangement Branch, U.S. Coast Guard Headquarters

A major step toward full-scale marine fire and safety testing was taken recently when the Coast Guard dedicated its Mobile testing facility. The facility, which consists of a T–1 tanker from the Maritime Administration's reserve fleet at Bay Minette, Ala., was officially dedicated at an August 22 ceremony. Present at the ceremony were dignitaries from the marine industry and the city of Mobile as well as Coast Guard representatives. Among the speakers were the Honorable Lambert C. Mims, Mayor of Mobile; Mr. Robert E. McCloskey, Chairman of the American Petroleum Institute Committee on Lifesaving and Firefighting; RADM Chester A. Richmond, Jr., USCG, Chief, Office of Research and Development; and RADM Charles P. Murphy, USCG, Chief, Office of Merchant Marine Safety. A plaque was unveiled, which will be placed at the facility site, dedicated to the memory of the late Charles A. Culver, one of the three industry representatives who first conceived the idea for the facility. Mrs. Charles A. Culver assisted in the unveiling.

The test ship M/V *Rhode Island* has been placed in a slip dredged in Little Sand Island located just across the Mobile Ship channel from the city of Mobile. To prevent any possible water pollution, the slip has been closed off by a shell dike. Access to the facility will be by water from the new Coast Guard base located at what was formerly Brookley Air Force Base.

The facility will be used for testing new marine fire protection and safety concepts under actual shipboard conditions. These tests will be useful not only for evaluating new concepts, techniques, and systems but will also allow the development of more meaningful small-scale tests than those presently in use. Some test work will be undertaken by the Coast Guard. However, the major portion of the work will be sponsored by industry

and other government groups at their expense.

To insure that the tests conducted will be the most meaningful possible and will be responsive to the needs of the industry, the Coast Guard has created an ad hoc group to offer advice on test planning and facility operations. The group will consist of prominent marine and fire protection experts. Named to the group initially were Mr. Irwin A. Benjamin, Chief, Fire Research Section, National Bureau of Standards; Mr. E. A. Davis, Vice President, Fire Protection, Underwriters' Laboratories, Inc.; Mr. Paul Hammer, Marine Consultant; Mr. J. T. Hughes, Naval Ship Engineering Center; Capt. A. H. McComb, American Petroleum Institute; Mr. Douglas L. Melton, Chief, Mobile Fire Department; Mr. William A. Riehl, Marshall Space Flight Center; and Capt. Kent M. Savage, Marine Representative, National Fire Protection Association. The group will also include Coast Guard representatives LCDR Jules A. Peebles, Office of Research and Development and Mr. Dale E. McDaniel, Office of Merchant Marine Safety, who will act as secretary and chairman, respectively.

Initial tests for the facility were in the planning stage at press time. The first series is expected to be tests of fire detection systems in the machinery space of the vessel. These tests will be followed closely by evaluation of machinery space fire extinguishing systems and tests of materials used in machinery space systems. These initial tests are being coordinated by the Coast Guard and are expected to involve a number of individual manufacturers. A recent discussion of facility operation and tentative testing plans attracted approximately 90 industry and government representatives. Considerable interest was expressed in test participation. It is hoped that the first tests will be underway by late September or early October.

Creation of the project has been a cooperative endeavor involving a number of industry and government groups. Besides the late Mr. Culver, both Captain Savage and Mr. Hammer were active in laying the early groundwork for the facility. In addition to loaning the M/V *Rhode Island* for use as the test ship, the Maritime Administration provided two barges to be used as support vessels. The Army donated two LCMs, which will also be used for water transportation to the testing site. A considerable amount of supporting equipment, such as electrical generators and air compressors, has been loaned by the Navy. It is expected that the National Bureau of Standards will provide instrumentation for recording test results, and the tests themselves will be recorded on video equipment supplied by the National Aeronautics and Space Administration. Mobile residents assisted in every way possible. For example, water was pumped from the Mobile fireboat, operated by the Mobile Harbormaster, Peter Shea, to trim the *Rhode Island*. The Coast Guard for its part underwrote expenses for dredging the slip and building the dike and provided general supervision to the project.

This splendid cooperation typifies two things: the continuing fine relationship between the industry and the Coast Guard toward improving marine safety, and the continuation of many years' effort to minimize the risk of fire at sea. ⚓

The T–1 tanker M/V Rhode Island *at rest in a slip dredged in Little Sand Island near Mobile, Ala. Plans are underway for a series of tests of fire detection systems in the machinery space of the vessel.*

ISSUE NUMBERS ON MERCHANT MARINE OFFICERS' LICENSES

William Raiolo

U.S. Coast Guard Marine Inspection Office, New York

MANY MERCHANT MARINERS do not understand the significance of the numbers appearing in the upper right-hand corner of their license. These numbers have a definite significance and have been used for many years by the Coast Guard and its predecessor authority as a means for identifying the issue number of a license. In recent years these numbers have lost their significance to some mariners because the true meaning has not been explained in detail for a long time. With this in mind, it is intended to provide the reader with an explanation as to the significance of these numbers so that they may be readily understood by all concerned.

There are three primary categories of licenses issued by the Coast Guard. These are:

(a) deck and engineer officer licenses,

(b) radio officer licenses, and

(c) licenses for operators of small passenger vessels and motorboat operators.

Licenses issued to persons in group (a) always have two-number digits. The first digit indicates the number of licenses issued to the holder in the present grade, as shown on the face of the license, while the second number reflects the over-all total number of licenses issued to the applicant. For example, an original license issued will reflect the issue number 1–1. When the holder of such a license presents the qualifying sea service and passes the required license examination for a raise in grade, the number will be shown as 1–2. Upon renewal (after 5 years from date of issuance) of a license in group (a), the first and second digit will be advanced one number, that is, from 1–1 or 1–2, to 2–2 or 2–3, depending upon the present grade of license held by the applicant. This also applies in the event a license expires, and a new one is issued.

For purposes of illustration, the following is offered as an example of a normal progression of license issue numbers:

Year	License	Issue numbers
0.....	Original license as 3d assistant engineer.....	1–1
1.....	License as 2d assistant engineer.....	1–2
2.....	License as 1st assistant engineer.....	1–3
3.....	License as chief engineer.....	1–4
8.....	Renewal of license as chief engineer.....	2–5
13.....	Renewal of license as chief engineer.....	3–9

The following example shows the progression where a person renews a license before raising it to the next higher grade:

Year	License	Issue numbers
0.....	Original license as third mate.....	1–1
5.....	Renewal of license as third mate.....	2–2
10.....	Renewal of license as third mate.....	3–3
11.....	License as second mate.....	1–4
12.....	License as chief mate.....	1–5
13.....	License as master.....	1–6
18.....	Renewal of license as master.....	2–7
23.....	Renewal of license as master.....	3–8

Mr. William J. Raiolo is Supervisory Applications Examiner in the U.S. Coast Guard Marine Inspection Office in New York. Mr. Raiolo, who reports directly to the Senior Inspector Personnel at MIO New York, has been with the Coast Guard in a civilian capacity since 1947. Mr. Raiolo served in the U.S. Army during World War II.

If a person receives an original license in a higher grade, such as an original second mate, the issue numbers still would be 1–1.

Moving on to category (b), radio officer licenses, it is noted that there is only one number found in the upper right-hand corner of the license. This number is shown as –1– upon issuance of an original license. At such time that this license is renewed, the number will simply be advanced by one number to –2–.

Those licenses issued in category (c) are similarly assigned only one number. The same policy concerning the advancement of issue numbers applies to this group as to those of group (b), except in event the applicant has both the license as operator *and* motorboat operator, and if he desires the license to be combined as one, then the highest issue number will be advanced by one digit. As an example, the motorboat operator license displays issue number –5– while his operator license discloses –2–, then the new license, which combines the two, will reflect the highest issue number of either license advanced by one digit, which in this case would be –6–.

The provisions for licenses in temporary grades have further tended to cloud the significance of issue numbers; however, applying the basic rules, they do stand the basic test, one of a definite and orderly progression of issue numbers.

If a candidate qualifies for and receives an original license in a temporary capacity such as temporary third mate (engineer) after successfully completing the examination, his issue number will be 1–1. When he obtains the additional qualifying experience to meet the sea service requirements, he will be issued a regular license as third mate (engineer). Because the basic grade of license does not change and is not a raise in grade and further no examination is required, the issue numbers on this newly issued regular license remain unchanged and shall be shown as 1–1.

Now if the holder of a regular license presents service which qualifies him to serve temporarily in the next higher grade, what significance does this impart on the issue number? The answer is quite simple—his regular license is *endorsed* and not exchanged; therefore, the issue number remains 1–1.

For purposes of illustration, the following is offered as an example:

Year	License	Issue Numbers
0.....	Original temporary 3d assistant engineer license.....	1–1
0.5.....	Regular 3d assistant engineer license.....	1–1
1.0.....	*Endorsement* as temporary 2d assistant engineer to regular 3d assistant engineer license.	(1)
1.5.....	Regular license as 2d assistant engineer.....	1–2
2.0.....	*Endorsement* as temporary 1st assistant engineer to regular 2d assistant engineer license.	(1)
2.5.....	Regular license as 1st assistant engineer.....	1–3
3.5.....	Regular license as chief engineer.....	1–4
8.5.....	Renewal of chief engineer license.....	2–5
13.5.....	Renewal of chief engineer license.....	3–6

[1] No number since endorsement only.

NOTE.—The time in years above represents the absolute minimum time for advancement. Additional time may be necessary to meet the requirements for a regular license under Part 10 of Title 46, Code of Federal Regulations. A regular license must be established before an endorsement to the next higher grade is authorized.

In conclusion there are several certificates of registry issued by the Coast Guard, often referred to as licenses, that do not have issue numbers. The reason for this is that these certificates do not expire after the normal 5-year period. These are for surgeons, pursers, and professional nurses. ⚓

YOUR LAST SMOKE?

At 0337 aboard his vessel a fire watchman on his regular rounds detected smoke coming from a technician's state room. Luckily, the door was unlocked, so the occupant was awakened and quickly taken to fresh air. A smoldering fire in the mattress was "extinguished" with a soda acid extinguisher. But the fire party did not stop there. Knowing that mattress fires are deep-seated and apt to rekindle unless thoroughly put out, they took the mattress to a shower and gave it a good soaking.

Courtesy The American Waterways Operators, Inc.

This man was lucky in that he *didn't* lock his door and rescue came fast. Some years ago, a deck officer returned to his ship after an evening on the town. He locked his door and turned in. Soon after, smoke was seen coming from under the door. His shipmates couldn't arouse him (the carbon monoxide had gotten in its licks), and before they could jimmy the door open, he was dead.

So, don't smoke in bed. If you do, it may well be your last smoke. ⚓

—MSTS Damage Control Bulletin.

CONTINENTAL OIL RIG

24 OCTOBER 1967

WITH NO

The actions taken on the *Continental Oil Rig 43–A* case follow in chronological order

MARINE BOARD OF INVESTIGATION

FINDINGS OF FACT

1. At approximately 0800 (CDT) Tuesday, 24 October 1967, an explosion and fire occurred aboard Continental Oil Co.'s A platform, located in block 43, Grand Isle area, Gulf of Mexico, latitude 28°59′53.167″ N., longitude 89°51′21.769″ W. The platform was completely devastated by the fire; property damage amounted to approximately $3½ million. There were eight persons aboard the platform at the time of the explosion. There was no loss of life and only minor injuries.

2. At the time of the casualty the weather was clear, with wind coming from the southeast at 5 to 8 m.p.h. Sea conditions were 1 to 2 foot swells from the southeast.

3. Platform 43–A is owned and operated by Continental Oil Co., whose local office is in Harvey, La. This platform functioned as a production facility which acted as a collection and processing point for crude oil produced by wells in adjacent fields. After processing, the gas and oil were transported ashore via pipeline. The main deck of the platform, measuring 146 feet (northwest by southeast) by 110 feet (northeast by southwest), was supported by 16 legs at a height of 55 feet 6 inches above Mean Gulf Level, in approximately 112 feet of water. A second deck, or cellar deck, at the 40-foot level consisted of steel gratings, as did the subcellar deck at the 9-foot level. Boat landings, also constructed of steel gratings, were located at the foot of the stairways and at a height of approximately 6 feet above the water. Stairways leading from the boat landings to the top deck of the structure were located on the west corner of the northwest end, and the east corner of the northeast end of the platform. The fog horn had been relocated to the south corner of the platform and was gas-operated. The doghouse, a portable building resembling a small house trailer, was equipped with four bunks for emergency use by persons who might be stranded aboard the platform due to adverse weather conditions. This building, which served as the office for platform operations and records, also contained an electric coffee urn and electric stove. The generator building contained two generating units: one natural gas-driven generator was in operation, supplying general service power to the platform; the diesel engine-driven generator was not in operation. The pump building contained three oil transfer pumps. The southeast end of this building had been removed and a fourth transfer pump had been installed between the generator shack and the pump building. All four transfer pumps were driven by reciprocating natural gas-burning engines, equipped with magneto ignition systems. The northwest wall of the pump building was open in the area of the roof riser, to provide ventilation through the building.

4. Equipment for processing oil and gas was located on the top level, with input and discharge piping extending to the second level. Pipelines leaving and arriving at the structure extended vertically, parallel with the legs of the structure. Unprocessed crude oil flowed into

43–A GULF OF MEXICO, EXPLOSION AND FIRE LOSS OF LIFE

43–A platform by pipeline from wells in adjacent source fields and platforms, as follows:

Source field	Platform	Diameter pipeline (inches)	Distance of source (feet)
32	J	6	4, 907. 1
40	A	8	43, 211
71	B	12	28, 265
69	C	6	8, 310
69	K	10	14, 618

Processed crude left the 43–A platform via a 12-inch line and was piped to Grand Isle 47–A platform, located 12 miles southwest of the platform 43–A, and then to shore. A 16-inch line delivered high pressure gas (800–1000#) to 43–A, from West Delta 69–K platform, where a network of gas delivery lines joined. The output of this line at 43–A was fed through a "gas sales metering station," located in the meter house on the southwest side of the platform. Provisions were included for the dehydration of this gas prior to sales metering.

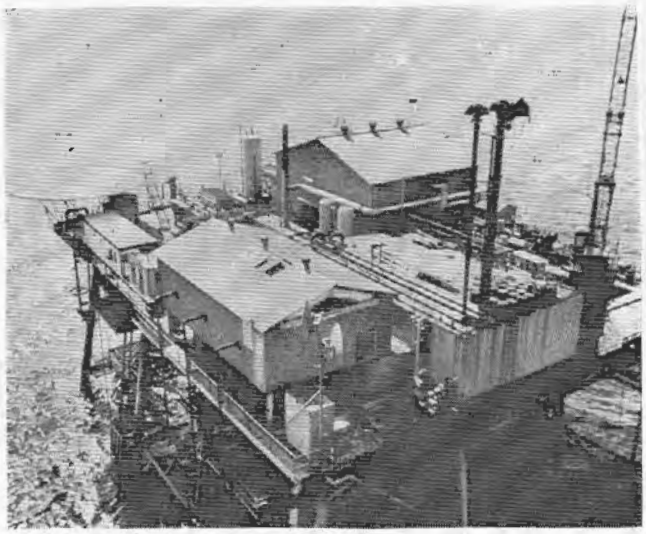
5. Incoming crude oil was piped directly into the primary separator at an input pressure of approximately 400 PSI. The primary separator was designed for a working pressure of 500 p.s.i., and equipped with a 3-inch diameter relief valve set to relieve at that pressure. The function of the separator was the removal of entrapped gases from the crude oil by gravity. Oil collecting in the separator was removed from the vessel by level-actuated dump valves. Gas products were taken off at the topmost point of the separator dome. Discharge from the primary separator flows to the secondary separator. Gas and oil separation is continued in the secondary separator. The normal operating pressure of the secondary separator is 60 to 100 p.s.i. The output of the secondary separator is controlled by level-actuated dump valves and is discharged through a 12-inch header to a 3,835 barrel rectangular storage tank. The secondary separator is also fitted with a 3-inch diameter relief valve set to return at approximately 230 p.s.i. Lifting of this relief valve had been experienced on a previous occasion. The exact date of this occurrence is indeterminate. Mr. Brunet testified that the cause of the actuating of the relief valve was traced to sand in the secondary separator.

6. The storage tank, located on the top level of the platform, served as a sump for the four oil transfer pumps. The four transfer pumps took suction on the storage tank by means of a 14-inch diameter header and discharged the oil into the 12-inch diameter lines leading to 47–A platform. The storage tank was constructed of mild steel, ¼-inch thickness, and designed to withstand a head of 13 feet of water. The tank extended 52 feet longitudinally in a northwest, southeast direction; 32 feet transversely in a northeast, southwest direction, and 13 feet deep. A solid transverse bulkhead, located approximately 7 feet from the southeast end of the tank, divided the tank into two separate tanks, the smaller having a 500 barrel capacity, and the larger a 3,335 barrel capacity. A 14-inch diameter equalizing line located externally on the southwest side of the tank, joined the two compartments. The equalizer line penetrated the longitudinal wall of both tanks approximately 6 feet from the bottom of the tank, and was U-shaped. An expansion trunk located on the east corner of the storage tank served as the penetration points for two 8-inch and two 10-inch diameter vent lines; the 10-inch

vents serving the larger tank compartment and the 8-inch lines serving the smaller compartment. The vent lines extended vertically out the top of the expansion trunk and then made a 180° bend vertically downward. Immediately above the tank top, the lines changed direction 90° and extended horizontally, parallel with the top of the tank, for a distance of approximately 30 feet, before turning upward 90° and extending vertically to a height of approximately 30 feet, where they were open to the atmosphere. The larger compartment of the tank was equipped with two level-indicating devices; one a plastic sight glass and the other a float or displacement type device which registered tank level by means of an air signal output read in pounds pressure. The air signal output also served to actuate a high-level alarm and safety system shutdown signal. The pressure read-out from the level indicator was displayed in the doghouse, and the sight glass was visible outside on the top deck of the platform. Collection trays, which were piped to an overflow collection sump at the bottom level of the platform, were located below the top deck. The function of this system was to catch any spillage from the storage tank and carry it to the sump, which was attached to a well guide near the water. A gas-powered sump pump which started when the oil in the sump reached a predetermined level, pumped the oil back up to the storage tank. The configuration of the sump was such that it was enclosed with a perforated cover at the top. Incoming oil to the two tank sections was supplied by separate 12-inch lines from the 12-inch secondary separator discharge header.

7. Gas extracted from the oil in the separation process flowed from the separator dome to either the compressor header or to flare. The direction of this flow is governed by the demand of the gas compressor in operation, by a back-pressure operated dump valve. Gas flares are a system used to remove waste gas from the platform and dispose of same. Two underwater flares, located on the southwest side of the 43–A platform, extended near the sea bottom and flared gas by discharging the gas into the water approximately 90 feet below the surface. Gas taken from the compressor header is compressed to 800 to 1000 p.s.i. and piped ashore, after first passing through the gas sales meter station. Also associated with the gas processing system are suction scrubbers which remove residual oil from the gas prior to compression. Gas is tapped off prior to the sales meter and piped as fuel to drive the prime movers for four oil transfer pumps, the solar turbine-driven gas compressor, one White reciprocating gas compressor, one reciprocating generator and a small sump pump. Gas is also used as the actuating media for the control valves of the safety system.

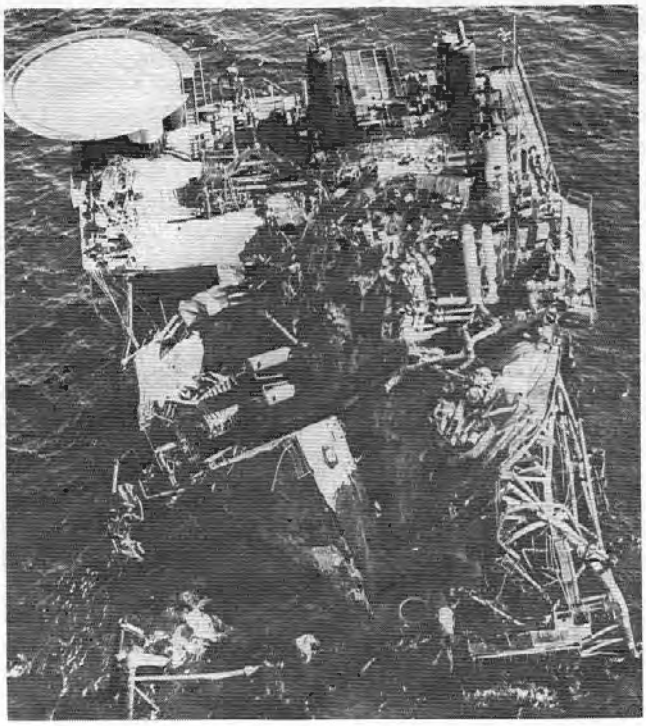
8. Prime movers aboard the platform driven by other internal combustion engines included: a permanently installed diesel-driven generator located in the generator building, which supplied power to the platform's distribution system; a temporarily installed diesel-driven generator (referred to as the rental generator); and a deep well pump driven by a GM–371 diesel engine. The deep well pump, located on the west corner of the platform, served as a fire pump and was also used as the source of water for washing down. The exhaust system of the pump engine was equipped with a horizontal muffler and flame arrestor.



BEFORE: Continental Oil Rig 43–A *stands in the Gulf of Mexico, everything normal on another working day. The platform served as a collection and processing point for crude oil produced by adjacent fields.*

9. The diesel-driven rental generator was a portable unit which had been placed aboard the platform to serve as a temporary source of A.C. power to drive the cooling system fan for the solar turbine compressor. The rental generator was located on the top deck of the platform near the west corner of the storage tank. Its exhaust system was equipped with a horizontal muffler and was not insulated. This exhaust system had been observed emitting sparks on previous occasions, but it could not be determined if sparks had been emitted the day of the casualty. The electrical connection from the generator to the solar turbine cooling fan was a temporary installation consisting of a large diameter 3-conductor cable, approximately 100 feet in length. The connection to the generator was made by metal lugs on the cable to bolts on the generator output terminals and covered with a rubber flap. The connection was not insulated or enclosed. The opposite end of this cable was made up to the leads of the turbine cooling fan motor by means of metal clips and friction tape. This connection was laying on the metal deck.

10. Other electrically operated equipment aboard the platform consisted of: two air compressors located in the



AFTER: The rig is transformed into a mass of blackened wreckage. An explosion followed the rupture of a storage tank, touching off a blaze that enveloped the platform for 48 hours. No lives were lost, but damages ran to $3½ million.

compressor building; one solar turbine cooling fan located on the southeast end of the platform; two air conditioners located inside of the doghouse; an electric stove and an electric coffee pot located in the doghouse; one ventilating fan in the generator building; one ventilating fan in the pump building; one air conditioner in the microwave building, and the microwave equipment itself. Explosion-proof fixtures were installed as lighting appliances; however, nonexplosion-proof fixtures with incandescent bulbs of indeterminate wattage were present in the supply shed, and fluorescent lighting fixtures in plastic housings had recently been installed under the heliport.

11. Firefighting equipment aboard the platform consisted of: a deep well fire pump with four 1½-inch hose stations, each equipped with 150 feet of hose, located on the top deck; one dozen 30-pound dry chemical portable extinguishers; three 15-pound portable carbon dioxide extinguishers; three semiportable hose-reel units, each containing 150 pounds of dry chemical. The portable and semiportable units were located throughout the top deck of the platform. Fixed CO_2 systems were installed with storage tank blanketing and storage tank vent flooding capabilities. Activation of the storage tank CO_2 system could be accomplished manually from stations located at the top of either stairway or automatically by means of a temperature sensitive element, and located in the top of the storage tank vent risers. A sprinkler head, which could be supplied with water from the fire pump, was installed in the top of each of the tank vents.

12. At approximately 0630 on 24 October 1967, a crew of six men arrived at the 43–A platform. After routine watch relief, the relieved crew departed the platform and the working crew remained aboard the platform, with pumper R. J. Bartles in charge. Other persons in the working crew aboard the platform were: Continental Oil Co. employees—A. J. Loupe, pumper; G. G. Brunet, roustabout; B & J Wire Line Service personnel—Donnie Crayon, Thomas Hamilton, C. N. Keene. Two other persons aboard the platform, Max Brien and Bobby Domaogue, who had arrived aboard the platform at 0715 that morning, were not members of the working crew but employees of U.S. Industries, a safety system sales and service company. The safety system equipment aboard the 43–A platform was not USI equipment, thus these two men had no specific duty aboard 43–A other than establishing the location of the USI equipment in that area, and were awaiting transportation to another platform. The crew aboard the 43–A platform rotated in 12-hour shifts. Personnel assigned to the crew were quartered aboard the nearby drill tender *Eagle,* located approximately 5 miles southeast of the 43–A platform, and transported to the platform for their shift via vessel. Upon completion of their assigned shift, the on-duty crew was replaced by a relief crew and returned to the drill tender.

13. Emergency drills were not held or scheduled aboard 43–A platform. Transient personnel were not instructed concerning any specific emergency procedures, or the locations of lifesaving equipment aboard the platform.

14. Monthly safety meetings were conducted for all available Continental personnel from the platforms. Attendance at these meetings was required of all supervisory personnel as frequently as their duties permitted.

15. No Smoking signs were posted, and smoking restrictions aboard the platform were strictly enforced. Designated smoking areas were the boat landings and inside the doghouse. Personnel arriving aboard the platform were immediately advised of smoking regulations and permissible smoking areas.

16. Periodic inspection of the lifesaving and firefighting equipment aboard the platform is a responsibility charged to platform and field supervisory personnel by Continental Oil Co. policy.

17. At approximately 0730 Mr. Bartles assigned clean-up work to roustabouts Keene and Hamilton. These men proceeded with their assigned work in the vicinity of

the pipe manifold. Mr. Crayon went to the metering storage cabinets to change meter recording charts. Mr. Brunet was attending to administrative duties in the doghouse. The two USI men were also in the doghouse awaiting transportation. Mr. Bartles, assisted by pumper Loupe, made preparation to receive "pigs" or pipe scrapers, through four lines running in to 43–A platform. The first pig trap to be lined up was in the 10-inch line leading in from 69–K field. This was accomplished almost immediately upon Mr. Bartles' arrival at 43–A platform at 0630. By approximately 0745 the pig traps had been aligned in the 6-inch line leading in from 69–C field, and the 12-inch line from 71–B field.

18. The running of pigs is a routine pipe-cleaning operation which is carried out on a monthly basis. A "pig" is a device used to clean the inside of pipelines, by forcing it through the pipeline with the pressure of the oil and gas mixture in the line. The body of the pig is cylindrical and hollow, with a diameter less than that of the pipe to be cleaned. The leading edge acts as a scraper against the pipe walls to remove built-up material from the pipe and hold it in the pig's hollow body. The trailing end is formed by a solid concave surface, upon which the pressure of the fluid normally conducted in the lines (approximately 400 p.s.i. pressure on the line from 69–K) acts to propel the pig. The pig is placed in the line at the well-head end of the line, and after traveling the length of the pipe line is removed by means of a pig trap on the 43–A platform. As the pig arrives at the trap it enters a dead-ended chamber and is arrested, while the oil flows through a 6 inch bypass line. The oil and gas mixture is then redirected through the normal flow line and the pig trap and pig are removed by means of bolted flanges. When the piping associated with the pig trap is in a normal flow configuration, (the pig trap bypassed), a 10-inch Hydril valve in the line is associated with the safety system. The Hydril valve is equipped with a remote control actuator which closes the valve upon signal from the safety system. This actuator is also equipped with a fusible plug which will cause the valve to close when subjected to enough heat to melt the plug.

19. The safety system is a gas-operated remote control system which provides a remote means for operating valves in all piping systems arriving at or leaving the platform in the event of an emergency. When actuated, this system closes the oil inlet and discharge lines, and opens the gas lines to flare. Actuator stations for the safety system are located as follows: on the face of the pump building adjacent to the northeast corner of the storage tank; on the northeast and southwest ends of the pipe manifold, and on the northwest boat landing, equipped with a ring for operation by means of a boat hook. The actuator station adjacent to the storage tank was also equipped with a remote shutdown which when actuated would secure the oil transfer pumps and gas compressors. A high level in the storage tank also actuated the safety system. This system had been actuated by a false high level in the oil storage tank approximately 10 days before the casualty. At that time the system did function and close the safety system valves, with the exception of the gas flare lines, which were actuated to the open position.

20. After completing the pig trap alinement and supervising ignition system repair work on one of the transfer pumps, Bartles returned to the doghouse, where he received word by radio, at approximately 0730, that the pig had left 69–K. At approximately 0800 Bartles heard a sound which he identified as the arrival of the pig from 69–K. Bartles then proceeded to the second, or cellar, deck where the pig traps were located, after first sending Loupe for tools. Bartles, upon satisfying himself that the pig was in the trap, closed the pig trap inlet and outlet valves and started to open the 10-inch Hydril valve in the normal flow 10-inch line in order to reestablish flow which had been interrupted when the 6-inch bypass line was closed off. As Bartles was opening the 10-inch Hydril valve, he heard a rush of gas and a bang. He then noted oil running down from the upper level in the vicinity of the corner of the storage tank, where the expansion trunk was located. This flow of oil was followed almost immediately by a flow of fire atop the oil. Bartles, upon seeing the fire, ran towards the ladder on the southeast end of the platform. As he started up the ladder he was met by Loupe, Keene, Brunet, Crayon, and Hamilton, coming down the ladder. The six men proceeded down the stairway to the boat landing. None of the men had life preservers in their possession at this time. Brunet took the life ring and electric waterlight located at the boat landing, and entered the water. Loupe, Keene, and Hamilton entered the water without any lifesaving equipment. Bartles and Crayon returned to the top deck of the platform via the southeast stairway. Bartles cast loose a life float which was located near the top of the stairway under the heliport. He then proceeded to the safety system actuator valve located in front of the doghouse near the southeast stairway and actuated what he thought to be the safety system actuator valve. Bartles testified that he later learned that in his haste he had actually operated a valve in an adjacent waterline. Bartles and Crayon returned to the boat landing on the southeast end of the platform, and after donning buoyant work vests procured by Crayon, entered the water.

21. Storage for the work vests was inside the doghouse. A metal box containing 12 to 24 Coast Guard approved life preservers was located directly outside and to the left of the doghouse exit, but these jackets were not used. Additional ring buoys equipped with waterlights were located on the top deck on the southeast side, and on the

lower level boat landing on the west corner. A second life float was located on the top level at the southwest side of the platform. The two life floats were equipped with waterlights, paddles, and a painter. As the life float (cut loose by Bartles) fell from the 55-foot level, the painter, which was secured to the rail, momentarily fouled, then freed itself under the weight of the life float which landed on the water on the southeast side of the platform.

22. The six men remained afloat in the water with the aid of the life-saving apparatus. Subsequent explosions came from the platform, and fire covered the water beneath the platform. Another explosion emanated from the gas sales meter area. The platform was subsequently engulfed by flames. The fire continued burning for approximately 48 hours. All wells and pipelines leading to and from the 43–A platform were secured at their sources. The safety system valves which were bypassed when the pig traps were alined did not stop the flow of oil into the structure.

23. Mr. Loupe, who had gone into the compressor building for tools approximately 3 to 4 minutes after the arrival of the pig from 69–K, heard the relief valve on the secondary separator open. Loupe left the compressor building via the northeast door and headed towards the secondary separator. At this time he heard a rumbling sound come from the storage tank. Looking at the storage tank, Loupe saw oil spraying out of the riser type tank vents located on the east corner of the storage tank. He started towards a set of emergency shutdown controls when an explosion interrupted his actions. Loupe then saw flames emanating from the storage tank in the vicinity of the expansion trunk where the riser vents penetrate the top of the storage tank. Flames propagated almost instantaneously across the southeast end of the storage tank, and then towards the southwest side of the platform, blocking Loupe's path toward the fire pump. Loupe at this point joined the group of men who escaped the platform down the stairway on the southeast corner.

24. Mr. Brunet was sitting in the doghouse attending to administrative duties prior to the arrival of the pig from 69–K. After the pig arrived, Brunet heard what he described as an unusual noise. He left the doghouse and upon stepping out on deck, heard and saw the secondary separator relief valve lifting. Brunet then looked toward the storage tank and saw a mist which appeared to him to be coming from the top of the expansion trunk. The tank appeared to swell and become distorted along the southeast edge of the tank. A rupture took place at the expansion trunk, and Brunet saw gas vapor coming from the ruptured area. Flames then swirled upward in the vapor area above the expansion trunk. Brunet exited the platform via the southeast stairway, and entered the water.

25. Mr. Crayon was standing in front of the metering device storage cabinet, preparing to change gas recorder charts at 0800, when he heard the secondary separator relief valve lift, and then saw oil coming out of the riser vents, followed by an explosion, and fire from the storage tank. Mr. Crayon's testimony places the origin of the fire on the top corner of the tank nearest the crane. Crayon, after seeing the fire, ran to the boat landing on the southeast side of the platform and then returned to the top level of the platform with Bartles, to obtain lifesaving gear. Crayon, after getting two life jackets, returned to the boat landing with Bartles, and entered the water.

26. Messrs. Keene and Hamilton were cleaning in the area of the pipe manifold on the southeast end of the platform. Both men heard an increase in flow in the piping manifold and then an explosion. Both men, upon seeing the fire spread, left the top level of the platform by means of the southeast side ladders to the boat landing, and entered the water.

27. Messrs. Brien and Domangue were sitting in the doghouse prior to the arrival of the pig from 69–K. They heard a sound which they thought to be the boat which was to pick them up striking the platform. Both men proceeded to the west corner of the platform and looked down to the water. Seeing no boat, they turned back towards the doghouse. At this time they heard an explosion and saw an object propelled into the air in the vicinity of the expansion trunk on top of the storage tank. The two men ran down the stairway on the west corner to the cellar deck level. As they descended the stairway, a flash fire occurred on that level which blocked further downward exit. Brien and Domangue returned to the top level and were cut off by fire in all directions and could not reach their work vests which they had placed near the crane. They jumped into the water on the northwest side of the platform near the fire pump. Once in the water they swam in a southerly direction down the southwest side of the platform.

28. The crew boat *Mr. Bud* was proceeding on a heading of approximately 160° magnetic, with 20 passengers aboard, piloted by Mr. Floyd Daigle. As the vessel was approximately 2½ to 3 miles distant from the 43–A platform, Mr. Daigle saw a flash, bearing 020 degrees relative. Daigle headed the *Mr. Bud* towards the 43–A platform. As his vessel neared the platform, Captain Daigle saw persons jumping into the water. He maneuvered the vessel from the stern steering station about the southeast end of the platform and picked up three men, including Bartles. Daigle then swung the vessel towards two men who were in the water with no life preservers. He picked up one of these men and threw a life preserver to the second. The attitude of the vessel, with respect to the man in the water to whom the life preserver had been thrown, had changed, and this man was now in front of the vessel. The life float with three men aboard was floating astern of the *Mr. Bud*. The life float appeared to Captain Daigle to be drifting in towards the platform. Captain Daigle left the stern controls and headed for-

ward to the cabin control station. At this time Bartles halted Captain Daigle from proceeding to the forward controls. Daigle then bypassed Bartles and proceeded to the forward control station, where he found that the controls could not be operated. He then returned to the after control station, where he found Bartles holding the engine controls. Bartles immediately yielded control of the vessel to Captain Daigle, who maneuvered the vessel to within 75 feet of the platform and picked up the three men from the life float. The remaining man in the water, Domangue, was picked up by the crew boat *Captain Phil,* and transferred to the *Mr. Bud,* who transported all eight survivors to the drill tender *Eagle.*

29. Captain Daigle received first aid treatment for a minor burn from a crewmember of the Coast Guard cutter *Point Sal,* which came alongside the *Mr. Bud* to render assistance.

30. All eight men rescued from the platform were transported to Our Lady of the Lake Hospital in Galliano, La., and released after treatment for shock. All men were ready to return to work within 72 hours after the casualty.

31. The *Mr. Bud* is an inspected small passenger vessel. A triennial certificate of inspection, which is to expire on 24 May 1970, had been issued to the vessel. The certificate of inspection permits a route of "Gulf of Mexico, not to exceed one hundred (100) miles from land while engaged in the offshore oil industry." A maximum of 28 passengers is permitted. A crew of one ocean operator and one deckhand for operation of less than 12 hours in any 24-hour period is required by the certificate of inspection. The gross tonnage as indicated on the certificate of inspection is 53 tons. Floyd Daigle holds a valid license as "Operator of Mechanically Propelled Passenger-Carrying Vessels" issued by the Officer in Charge, Marine Inspection, New Orleans, La., for "Waters other than ocean and coastwise," with a tonnage endorsement of not more than 100 gross tons.

CONCLUSIONS

1. It is concluded that the cause of the casualty was the rupture of the 3,835 barrel storage tank by an excessive pressure, exerted internally. The exact source of this pressure cannot be definitely determined; however, it may be reasonably concluded that the gas pressure arrived at the platform with the pig from 69–K. After passing through the primary separator, and causing the secondary separator relief valve to lift, the gas reached the storage tank at a pressure in excess of 230 p.s.i. due to probable failure of the level-actuated dump valves, possibly due to fouling by sand.

2. The riser vent system, although open to the atmosphere at a height of 30 feet, contributed to the casualty as the vent pipes upon leaving the expansion trunk made numerous changes of direction, both horizontally and vertically. The designed pressure head of the storage tank is 13 feet of water. The approximate specific gravity of this oil is 0.87. Therefore, under static conditions, the designed pressure of the tank would be exceeded with a height of oil in the vent of more than 15 feet.

3. A second factor contributing to the tank failure was the U-shaped section of pipe which connected the two compartments of the tank. This pipe may have acted to throttle the flow of oil from the smaller compartment and contributed to the development of over-pressure.

4. The sequence of storage tank failure was as follows:

a. The tank was subjected to over-pressure.

b. The bolted flange vent elbow mounting plate on the expansion trunk of the 500 barrel compartment moved, allowing the escapage of gas fumes.

c. A spray of oil and gas was observed from the top of the vents some 30 feet above the tank top.

d. The tank then failed by bursting at the expansion trunk, spewing the area with oil and gas.

5. It is concluded that a most probable source of ignition for the gas and oil emitted from the tank after rupture was the rental generator installation which included: an uninsulated exhaust pipe; sparks issuing from the open exhaust pipe, and nonexplosion-proof terminal connections.

6. Additional sources of vapor ignition included:

a. The magneto ignition system of transfer pumps which was thought to have caused earlier small fires.

b. The nonexplosion-proof incandescent lighting temporarily installed in the warehouse.

c. The nonexplosion-proof equipment in the generator house, together with the generator switchgear.

d. A spark resulting from unknown metal to metal contact at initial tank failure.

7. Platform 43–A is an unmanned platform as defined by 33 CFR 140.10–45, as persons are not living and accommodated aboard the platform.

8. The difference between an unmanned platform which is attended by working personnel on a round-the-clock basis, and a manned platform, as determined by the quartering of personnel aboard, does not appear to be adequate criteria for the omission of: emergency drills on a periodic basis, and the posting of an emergency bill. On this structure there is clear intent that it shall be manned continuously.

9. The actions of the person in charge, R. J. Bartles, were appropriate and timely in providing lifesaving equipment to the persons in the water.

10. Bartles' action of operating the water valve instead of the safety shutdown valve, may be attributed to the lack of contrasting characteristics of the safety system shutdown actuator to other nearby valves.

11. Firefighting equipment aboard the platform was in excess of that required by 33 CFR 145 for an un-

manned platform; however, the rapid spreading of the fire precluded the use of any firefighting equipment.

12. Lifesaving equipment aboard the platform complied with the requirements of 33 CFR 144.10 for an unmanned platform, and functioned in a satisfactory manner.

13. Means of escape from the platform complied with the requirements of 33 CFR 143.05–10 for an unmanned platform. In fact, two means of escape were provided. Brien and Domangue jumped into the water from the top deck, a height of approximately 55 feet, without injury, as they had previous Naval training in this procedure.

14. The general arrangement and layout of the platform did not consider any specified areas to be more hazardous than others.

15. The outfitting of the main deck with a common collection sump with air venting at the top is considered a poor installation.

16. Prevailing weather and sea conditions were ideal for the rescue of personnel in the manner accomplished.

17. The prompt actions of Mr. Daigle, operator of the *Mr. Bud,* in diverting his craft to the scene of the casualty contributed greatly to the survival of persons escaping from the platform, and are noteworthy.

18. Captain Floyd Daigle was operating under the authority of his operator's license as the *Mr. Bud* was operated inside the line of demarkation of Inland and International Rules of the Road, which is considered inland waters.

19. The incident aboard *Mr. Bud* between Mr. Daigle and Mr. Bartles, concerning control of the vessel, in no way indicates any act of misconduct on the part of either person; but, rather, a misunderstanding on the part of Bartles as to the intentions of Daigle, brought on by the anxiety of the situation.

20. There is no evidence that any law or regulation relating to fixed structures on the Outer Continental Shelf has been violated.

21. There is no evidence that any personnel of the Coast Guard or any other government agency contributed to this casualty.

RECOMMENDATIONS

1. The provisions for tank venting similar to those set forth in 46 CFR 55.10–60, should be made applicable to storage tanks on platforms of this nature, on the Outer Continental Shelf.

2. At the present time 33 CFR 140.10–25 differentiates between a manned and unmanned structure by (*a*) continuous occupancy, (*b*) persons living and accommodated thereon. The primary consideration is duration of occupancy, and on the structure under investigation there is clear intent that it shall be manned on a 24-hour (12 by 12) watch basis. Therefore, the definition of a manned platform as set forth in 33 CFR 140.10–25 should be revised to include any structure which is occupied by personnel for a period in excess of 12 hours.

3. All emergency bills and emergency drills should include instructions to personnel concerning procedures for entering the water from high elevations.

4. Hazardous areas should be recognized and so designated by the general arrangement of the artificial island. The class-division concept found in the National Electrical Code and as set forth in the Electrical Engineering Regulations (CG–259) should be made applicable to this type structure.

5. Provisions should be made for the requiring of the use of explosion-proof equipment according to the areas defined by paragraph 4 above, and included in subchapter N.

6. The normal avenue of departure from the top level of a platform is via two remotely located escape routes to the water level boat landings. It appears that the location of some life preservers at the lowest level, and a means to remotely launch or release the life floats from this level, is desirable.

7. The outfitting of the main deck with a common collection sump is probably widespread throughout offshore platforms due to the need for the control of any pollution problem. Therefore, 33 CFR 143 should include requirements concerning a nonhazardous venting arrangement.

8. Provisions for distinctive shape and marking of emergency shutdown devices installed aboard the platform should be included in 33 CFR 146.05–35.

29 November 1967.

COMMANDANT'S ACTION

1. The record of the Marine Board of Investigation convened to investigate subject casualty has been reviewed and the record, including the Findings of Fact, Conclusions, and Recommendations is approved subject to the final determination of the cause of the casualty by the National Transportation Safety Board.

2. At about 8 a.m. on 24 October 1967 an explosion and fire occurred aboard Continental Oil Co. platform 43–A. The platform functioned as a collection and processing point for crude oil and gas produced in adjacent wells. While no personnel are berthed on the platform it is manned on a 24-hour basis and at the time of the explosion there were 8 persons on board. There was no loss of life and only minor injuries.

REMARKS

1. In the administration of matters relating to the statutory duty of the Coast Guard to promote safety of life and property, the utilization of the U.S. Coast Guard Merchant Marine Council has in the past proven both beneficial and effective. The Merchant Marine Council is a deliberative body, similar to a board, established to advise the Commandant as to policy in connection with matters pertaining to maritime safety. It has no operating authority or responsibility. In general, the Council considers proposals affecting maritime safety, conducts public hearings and provides a forum where these proposals and other problems affecting the public, industry, labor and others may be considered.

2. The report of this Marine Board of Investigation will be forwarded to the Merchant Marine Council for its consideration of the issues raised and the recommendations submitted.

DISPOSITION OF RECOMMENDATIONS

Recommendation 1. This recommendation is concurred with and will be forwarded to the Merchant Marine Council for its consideration.

Recommendation 2. The Board's recommendation that the definition of a manned platform as set forth in 33 CFR 140.10–25 should be revised to include any structure which is occupied by personnel for a period in excess of 12 hours will be considered. It is noted that when a structure is so designated certain additional items of safety equipment and certain operating procedures are required. On the Continental 43–A structure some of these items were voluntarily provided by the owners for the protection of personnel working on board the structure. However, where the operational procedure calls for the continuous manning of the structure, as was the case in this instance, it would seem appropriate and desirable that those items of safety equipment designed for personnel protection now required on manned structures also be provided on structures that are or are designed to be continuously manned.

Recommendation 3. No action will be taken concerning instructions for entering the water from high places since it is noted that the industry Manual of Safe Practices in Offshore Operations November 1967, contains the recommended instructions.

Recommendations 4–8. Recommendations 4 through 8 concerning the need for designating hazardous areas, explosion proof equipment, relocating life preservers and life float releases, venting collection sumps, and distinctively marking the emergency shutdown devices will be considered.

2. Subject to the foregoing remarks, disposition of the Recommendations and the final determination of the cause of the casualty by the National Transportation Safety Board, the record of the Marine Board of Investigation together with Findings of Fact, Conclusions, and Recommendations is approved.

W. J. Smith,
Admiral, U.S. Coast Guard,
Commandant.

17 February 1969.

ACTION BY NATIONAL TRANSPORTATION SAFETY BOARD

This casualty was investigated by a U.S. Coast Guard Marine Board of Investigation convened at New Orleans, La., on November 2, 1967. A representative of the National Transportation Safety Board attended the proceedings.

ANALYSIS

The function of platform 43–A was to collect and process crude oil produced from nearby wells. The oil and extracted gas were then piped ashore. *Attachment No. 1* is a scheme of the main flow components involved in the casualty. The main part of the processing in this type of operation took place in a primary and a secondary separator. The function of these was the separation of the gas from the crude oil, utilizing gravitational and centrifugal forces. Incoming crude oil, at a pressure of approximately 400 p.s.i., was piped directly to the primary separator which had a relief valve set to open at 500 p.s.i. Gas products were taken off at the top of the separator while the oil which collected in the lower part of the separator discharged, by means of level actuated dump valves, to the secondary separator where the process was continued. The normal operating pressure on the secondary separator was 60 to 100 p.s.i. and it was fitted with a

relief valve set at 230 p.s.i. Crude oil collected in the secondary separator was discharged, through its dump valves, to a storage tank from whence it was pumped ashore. The dump valves were individually operated by liquid level control devices using the production gas as an operating medium and responding to the level indication from floats in the separators. The level of the oil was maintained at a point which provided a liquid seal at the separator oil outlet. There were two dump valves on each separator. The valves were located at the same level but the sensing devices were at different levels. Both valves would operate during periods of heavy load. The primary separator dump valves were a single port type, while those on the secondary separator were double-ported. The gas supply to the controllers and various instruments was protected, in the event of failure of the main source, by a secondary system and finally by a supply of bottled gas which would cut in automatically. However, malfunction of a controller on the primary separator, such as by obstruction of a relay nozzle, had been known to result in the dump valve hanging open.

Included in the work scheduled on the day the casualty occurred was a routine pipe-cleaning operation consisting of running a "pig" through the lines coming to the platform from the wells. A pig is a device used to clean the inside of the pipe by propelling it through the pipeline with the pressure of the oil and gas mixture in the line. The leading edge acts as a scraper to remove built-up material from the walls. The pig is placed in the pipeline at the well-head end of the line and, after traveling the length of the line, is removed by means of a pig trap on the 43–A platform. The pig trap is a dead end chamber in the pipeline fitted with isolation and bypass valves. It is normal to experience an increased oil volume ahead of an arriving pig and an increased gas volume behind it.

At the time of the casualty, the pig traps in three of the five lines coming to the platform had been lined up to receive pigs and the person in charge of the platform crew was on the level below the main deck operating the valves on one trap following the arrival of the first pig. He closed the trap stop valve and the 6-inch bypass valve and began opening the 10-inch stop valve in the main line to reestablish the normal flow. He heard a rush of gas and a bang and saw oil running down from the upper level in the vicinity of the corner of the storage tank. Fire followed the oil almost immediately.

The first evidence of unusual conditions on the main deck was the operation of the relief valve on the secondary separator. This was followed in rapid sequence by a rumbling sound in the storage tank, the spraying of the oil from the tank vents, rupture of the tank, a loud explosion-like noise, and fire. *Attachment No. 2* indicates the hypothesis of the plant situation at the time of the casualty.

In analyzing the facts and the sequence of events, it appears that there is a relationship between the casualty and the operation of the pig, and that the following conditions existed and events transpired:

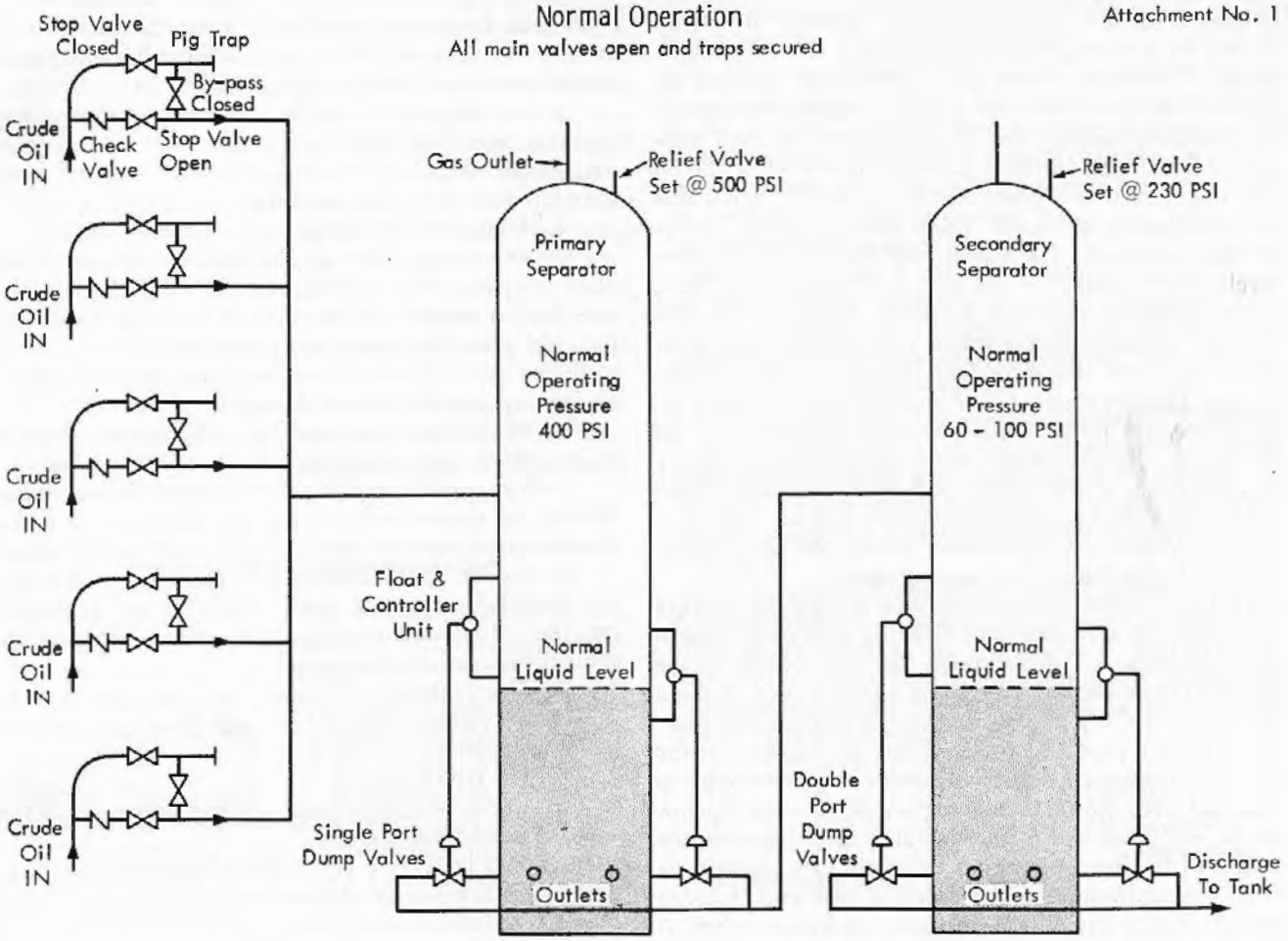
1. The liquid level in the separators was at a low operating level due to reduced amount of crude oil coming aboard with three of the five lines bypassed and therefore throttled at the pig traps.
2. A large volume of gas arrived behind the pig.
3. The closing of the trap isolation and bypass valves prior to opening the main valve stopped all flow in that line, further reduced the amount of crude oil in the system, and permitted more gas rising through the elevated section of piping from the sea floor to displace the crude oil and accumulate behind the main valve.
4. As the main valve was opened, this large volume of gas passed immediately to the primary separator.
5. Gas passed through the primary separator dump valve(s) to the secondary separator, subjecting it to an above normal pressure and causing its relief valve to open.
6. Gas at approximately 230 p.s.i. passed through the secondary separator dump valve(s) and expanded into the storage tank causing the rumbling noise and the spray discharge from the vents.
7. The vents did not have the aggregate area to relieve this volume of gas at the high flow rate, and the tank was subjected to overpressure.
8. The tank ruptured.
9. Fire developed immediately due to ignition of the spewing oil and gas mixture.

Insofar as ignition is concerned, the Coast Guard report indicates many possible sources involving the various pieces of equipment and fixtures on the platform or it could have been caused simply by sparks generated by and during the tank failure.

With regard to the high gas pressure in the secondary separator and the storage tank, it is logical to assume that this condition involved faulty operation of the dump valves on the primary *and* the secondary separators. A study of the valves, their method of operation, and operating experience indicate that the condition which developed most probably was the result of:

1. Dump valve hanging open.
2. Dump valve leaking.
3. Malfunction of the dump valve controller.
4. A combination of the above.

With the primary dump valve hung open, the oil level would be lowered to the point that the discharge pipe would lose its liquid seal, permitting high pressure gas to pass to the secondary separator. The crude oil in the secondary separator would be discharged to the storage tank at a higher than normal rate because of the much higher (230 p.s.i.) gas pressure behind it. With the sec-

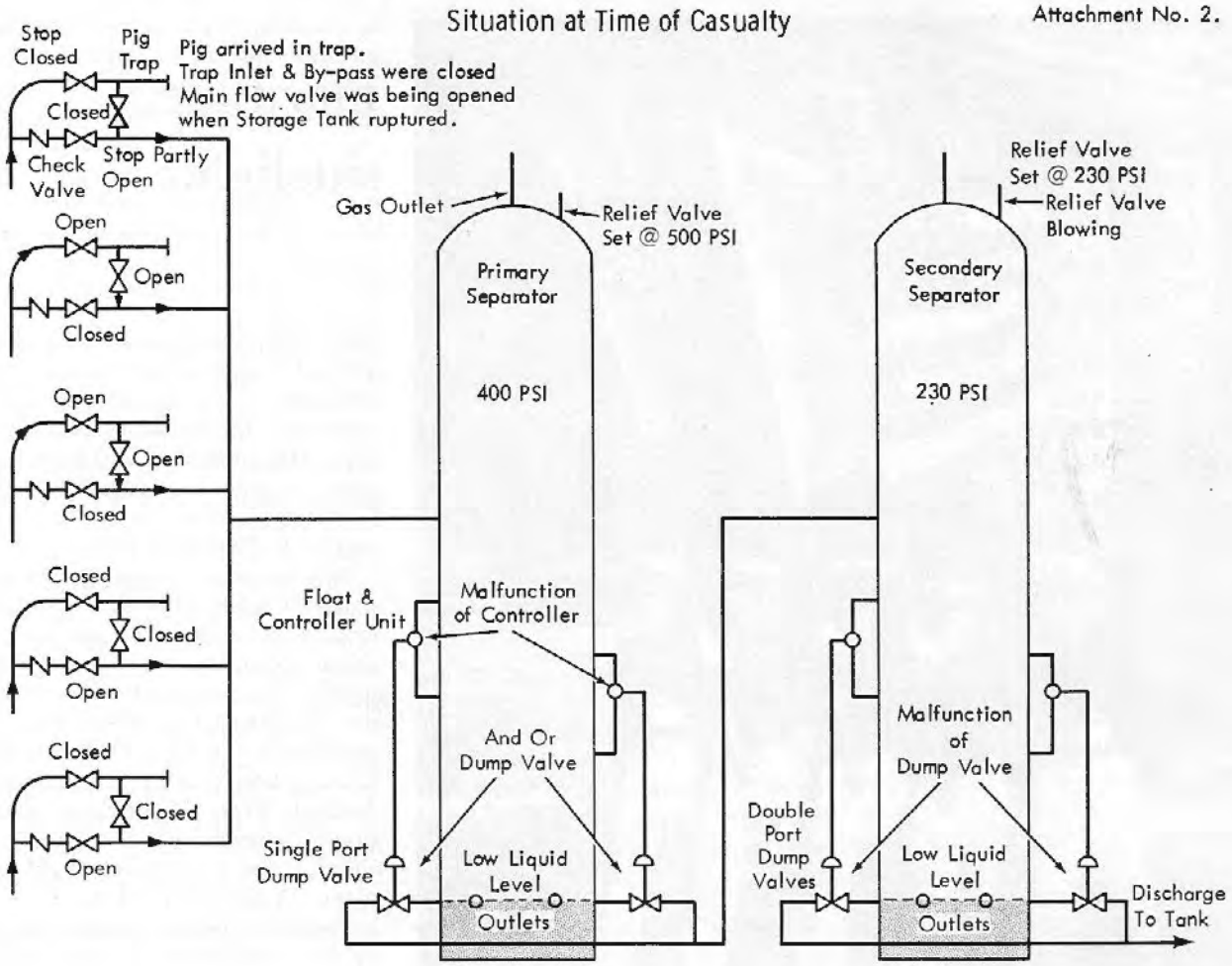


ondary separator dump valve also hung open (not likely), or if the deterioration that the double-ported valve sustains in normal wear had resulted in its failure to seat tight against the oil flow from the secondary separator (most likely), the high gas pressure would force the oil through the valve until the secondary separator discharge pipe lost its liquid seal, permitting the gas to pass through to the storage tank. A leaking dump valve on the secondary separator would not be obvious at normal working pressure until its condition became severe. The flow and venting restrictions created by the characteristics of the construction of the storage tank as described in the Coast Guard report would also cootribute to overpressure.

Continental Oil Co. has advised that all of the platform equipment, with the exception of two water tanks and the heliport were so badly damaged by the fire that it was classified as junk and sold as such. The fire destroyed the physical evidence pertinent to the cause of the accident. Visual examination of the damaged equipment by Continental personnel did not shed any light on the cause of the casualty.

PROBABLE CAUSE

The Safety Board concludes that the investigative record in this case does not contain sufficient information to provide a determination of the cause of this casualty. However, based on the most likely hypothesis, the Board concludes that the most probable cause was faulty operation of two of the four dump valves of the separators in a chain of events combined with a malfunction of the primary dump valve controller during the pipe cleaning



operation which allowed a large volume of high pressure gas to enter the storage tank, rupturing it.

RECOMMENDATIONS

The Safety Board concurs with the Commandant relative to the recommendations of the Marine Board. In addition, the Board makes the following recommendation:

1. That the Department of Transportation, in conjunction with the Department of the Interior, study the need for safety regulations or the revision of regulations for fixed and mobile drilling and production units operating on the outer continental shelf, including the operating equipment, the methods and operations used in drilling for and the production of oil, gas, or other subsoil minerals, and the transportation thereof by pipeline.

Adopted this 21st day of May, 1969.
By the National Transportation Safety Board:

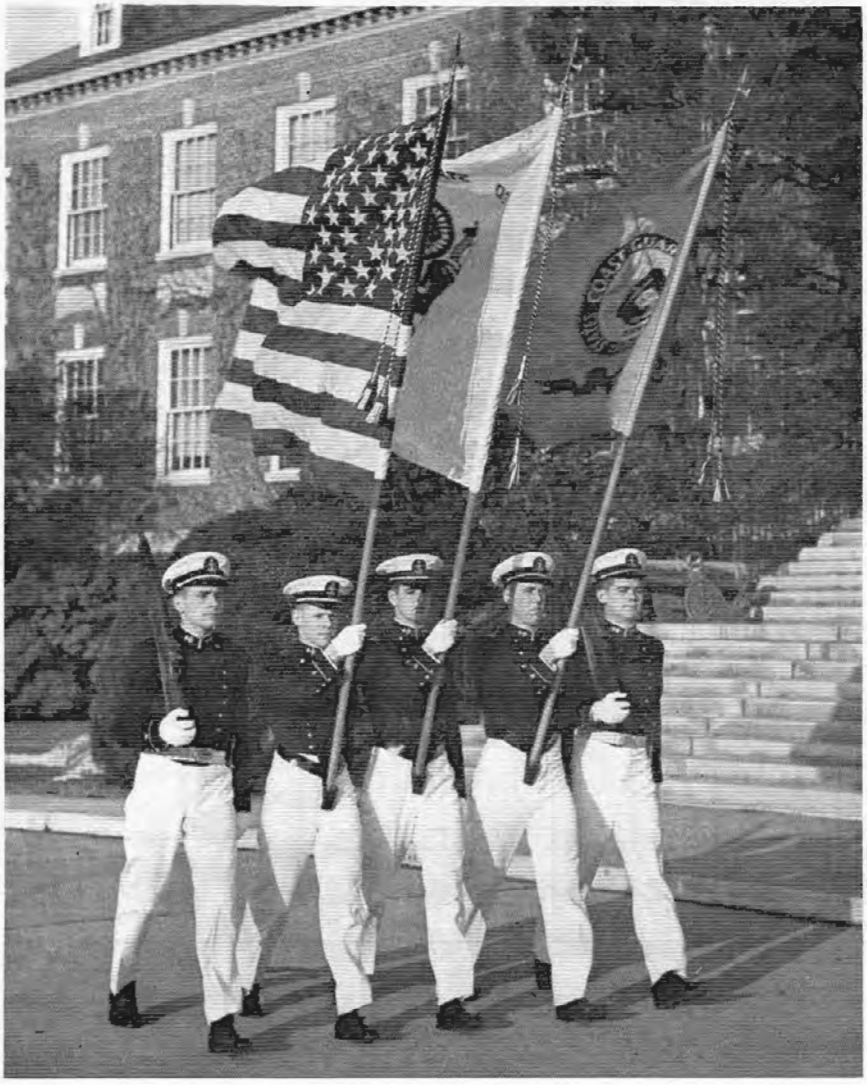
/s/ JOHN H. REED,
Chairman.

/s/ OSCAR M. LAUREL,
Member.

/s/ JOSEPH J. O'CONNELL, Jr.,
Member.

/s/ LOUIS M. THAYER,
Member.

/s/ FRANCIS H. MCADAMS,
Member.



A color guard comprised of five cadets on parade at the U.S. Coast Guard Academy, New London, Conn., carries the flag of the United States, the Coast Guard Color, and the Coast Guard Academy Corps of Cadets Flag.

maritime sidelights

U.S. Coast Guard Academy Announces Annual Competition

The United States Coast Guard Academy has announced that the next annual competition for appointment will commence with the 6 December 1969 administration of the College Entrance Examination Board (CEEB) tests. The December CEEB test results will be the latest ones accepted for evaluation for the Class of 1974. Interested high school candidates should contact their guidance counselors for assistance in registering for the prescribed CEEB tests and must submit the required Coast Guard application form to the Academy by 15 December 1969.

Appointment to the Academy is obtained solely through competitive examination; there are no congressional appointments or geographical quotas. The competition consists of the candidate's high school rank, his performance on the College Entrance Examination Board's (1) Scholastic Aptitude Test, (2) English Composition Achievement Test, and (3) either Level I or Level II Mathematics Achievement Test, and his leadership potential as demonstrated by his participation in high school extracurricular activities, community affairs, or part-time employment. Most successful candidates rank in the upper half of their class and demonstrate a high degree of proficiency in the mathematical and scientific academic areas. However, any high school senior or graduate, who will have reached his 17th but NOT his 22d birthday by July 1, 1970 and who is a citizen of the United States, unmarried, and of good moral character is eligible to compete for an appointment.

Coast Guard cadets obtain an excellent undergraduate education at no personal cost and, in addition, receive pay and allowances fully adequate to fulfill all their ordinary living expenses. The constantly updated Academy curriculum offers liberal

arts, engineering, and professional subjects, with a choice of either an engineering, physical science, social science, or marine science-oceanography emphasis. These areas of academic interest, combined with the varied elective courses, establish a solid foundation for a challenging career. Graduates of the Academy are awarded Bachelor of Science degrees and are commissioned as Ensigns in the United States Coast Guard. Selected officers may pursue further postgraduate education and specialized training in many leading civilian and military graduate or professional schools in such fields as aviation, business administration, electronics, engineering, law, naval architecture, and oceanography.

Should you know of a young man—perhaps your son or neighbor—who is interested in the above fields, inform him of this outstanding educational opportunity offered by the Coast Guard Academy. Any young man coming within the prescribed age limits who believes he meets the scholastic, physical, and character standards and is interested in a professional career as a Coast Guard officer is encouraged to make application.

Applications and additional information may be obtained by writing to: Director of Admissions, U.S. Coast Guard Academy, New London, Conn. 06320. ⚓

Cairo MIO Relocated

The Marine Inspection Office at Cairo, Ill., has been relocated to Paducah, Ky., as of 1 August 1969. The new address is 215 Katterjohn Bldg., Box 1400, Avondale Sta., Paducah, Ky. 42001. ⚓

Social Security Numbers Used On Documents

Federal agencies are beginning to use Social Security numbers for identification purposes wherever possible. This change is reflected by the Coast Guard in the issuance of merchant mariners' documents. As of August Social Security numbers are being employed on documents in lieu of "Z" numbers.

Applicants who have not previously held a "Z" number will be issued documents with their Social Security number typed in the space previously used for "Z" numbers. A Social Security number must be presented to obtain a permanent document, but applications can be processed pending receipt of a Social Security number.

When a document is reissued to a seaman currently holding a "Z" number, his Social Security number will be placed on the back of the document. ⚓

Ship Firms Receive Annual Awards

Outstanding safety records in inland and ocean ship operations received special recognition last June from the Marine Section of the National Safety Council and the American Institute of Merchant Shipping. The annual presentation saw 34 awards given to leading American and one Canadian vessel operators for their exceptional records of safe operations.

With Robert J. Blackwell, deputy maritime administrator, on hand to present the awards of the National Safety Council, the United Fruit Co. was cited as winner for 1968 in the oceangoing and coastwise dry cargo and passenger vessel category. Other NSC awards were also made to the Pure Oil Co. for ocean and coastwise tanker safety, and to the Canada Steamship Lines Ltd., Buckeye Steamship Co. and M. A. Hanna Co. for safety records in the Great Lakes.

Separate Category

In a separate category of safety achievement—the Jones F. Devlin Safety Awards sponsored by AIMS—eight United States ships and a total of 29 vessels were cited for operating for at least 2 years without a lost-time crew accident.

Mr. Devlin is the retired official of United States Lines who helped create the awards more than a decade ago to stress safety on American ships.

Companies cited with the Devlin Award included: Columbia Transportation; Getty Oil Co.; Humble Oil & Refinery; Lykes Bros. Steamship Co.; Mobil Oil Co.; Texaco Inc.; United Fruit Co., and United States Lines Co.

The Devlin awards, handled by United States Coast Guard Commandant Admiral Willard J. Smith with the assistance of AIMS President James J. Reynolds, give special recognition to vessels completing 4 accident-free years and even higher honors to ships with safety records extending to 8 years.

Those given special 8-year awards by Admiral Smith included the Great Lakes freighters *Armco* and *Edmund Fitzgerald* of the Columbia transportation division of Oglebay Norton Co. and the tanker *Louisiana Getty* of Getty Oil Co.

Other winners in the category of over 4 years of safety were the freighter *Yaque* of United Fruit Co., and the tankers *Texaco Minnesota* and *Texaco Maryland* of Texaco Inc. ⚓

—Journal of Commerce.

MERCHANT MARINE PERSONNEL STATISTICS

MERCHANT MARINE OFFICER LICENSES ISSUED

FISCAL YEAR ENDING JUNE 30, 1969

DECK

Grade	July through September (1968)		October through December (1968)		January through March (1969)		April through June (1969)	
	Original	Renewal	Original	Renewal	Original	Renewal	Original	Renewal
Master:								
Ocean	48	455	53	387	160	310	72	384
Coastwise	6	29	3	19	3	36	2	35
Great Lakes	4	10	1	12	14	64	8	37
B.S. & L	13	41	11	61	7	69	29	81
Rivers	11	45	11	42	7	57	15	79
Radio Officer Licenses issued	137	175	53	124	39	276	33	307
Chief mate:								
Ocean	85	97	51	96	59	98	77	131
Coastwise		2		1	1	5	1	2
Great Lakes			2				3	
B.S. & L				1	1	1		
Rivers					1	2		
2d Mate:								
Ocean	114	121	128	105	119	113	98	119
Coastwise	1		1		38	1		
3d Mate:								
Ocean	121	124	68	70	109	84	242	195
Coastwise		2	2		1	2		
Pilots:								
Great Lakes	7	10	4	6	21	53	24	57
B.S. & L	56	96	49	115	34	95	64	100
Rivers	83	114	80	107	62	142	104	161
Master: Uninspected vessels	6	11	26	22	34	36	33	307
Mate: Uninspected vessels	11	2	13	5	12	5	24	6
Motorboat operators	425	632	187	301	347	276	539	673
Total	1,128	1,966	742	1,475	1,069	1,275	1,368	2,674
Grand total	1,128		2,217		2,794		4,042	

ENGINEER

Grade	July through September (1968)		October through December (1968)		January through March (1969)		April through June (1969)	
	Original	Renewal	Original	Renewal	Original	Renewal	Original	Renewal
STEAM								
Chief engineer:								
Unlimited	27	435	46	434	56	500	41	264
Limited		41	3	822	6	69	5	73
1st assistant engineer:								
Unlimited	69	189	97	159	105	202	84	175
Limited	4	11	3	18	3	26	1	15
2d assistant engineer:								
Unlimited	142	235	132	226	142	204	126	275
Limited	1	3		9	3	6	3	2
3d assistant engineer:								
Unlimited	134	248	74	205	67	193	400	210
Limited	5	3	2	2	2	4	9	6
MOTOR								
Chief engineer:								
Unlimited	9	81	7	73	23	76	13	62
Limited	25	109	21	95	23	119	5	103
1st assistant engineer:								
Unlimited	4	19	7	29	23	36	21	19
Limited	18	24	11	27	12	36	13	27
2d assistant engineer:								
Unlimited	13	25	6	23	18	33	15	32
Limited	2	3	2	7	5	10	5	11
3d assistant engineer:								
Unlimited	74	302	15	47	34	270	342	274
Limited	3	4	2	12	6	8	2	6
Chief engineer:								
Uninspected vessels	10	13	24	18	36	15	37	12
Assistant engineer:								
Uninspected vessels	5	6	10	5	14	7	15	8
Total	545	1,751	462	2,211	578	1,811	1,137	1,574
Grand total	2,296		1,933		2,389		2,711	

MERCHANT MARINE PERSONNEL STATISTICS—Continued

MERCHANT SEAMEN'S DOCUMENTS ISSUED

Type of document	July through September (1968)					October through December (1968)					January through March (1969)					April through June (1969)				
	Atlantic coast	Gulf coast	Pacific coast	Great Lakes and rivers	Total	Atlantic coast	Gulf coast	Pacific coast	Great Lakes and rivers	Total	Atlantic coast	Gulf coast	Pacific coast	Great Lakes and rivers	Total	Atlantic coast	Gulf coast	Pacific coast	Great Lakes and rivers	Total
Staff officer	15	10	55	2	82	28	7	31	1	67	33	9	34	1	77	49	10	30	3	92
Continuous discharge book	------	2	1	------	3	------	1	------	------	1	------	------	------	------	0	------	------	------	------	0
Merchant mariner's documents	2,904	1,390	1,733	1,622	7,649	1,886	1,177	1,585	897	5,545	1,810	1,016	1,477	513	4,816	2,501	1,514	1,857	1,923	7,795
AB any waters unlimited	171	38	118	26	353	74	45	80	21	220	75	52	97	20	244	187	93	77	25	382
AB any waters, 12 months	132	69	79	59	339	103	60	78	32	273	76	71	67	12	226	100	162	60	37	359
AB Great Lakes, 18 months	2	------	6	12	20	1	------	11	13	25	2	------	10	5	17	1	------	23	11	35
AB tugs and towboats, any waters	2	2	1	------	5	1	9	5	------	15	1	6	4	------	11	4	9	8	------	21
AB bays and sounds	------	------	------	------	------	------	------	1	------	1	------	------	------	------	0	------	------	------	------	0
AB seagoing barges	------	------	------	------	------	------	------	------	------	0	------	------	------	------	0	------	------	6	------	6
Lifeboatman	382	41	144	1	568	45	18	72	1	136	58	32	59	1	150	179	103	79	2	363
Q.M.E.D.	406	93	257	72	828	307	82	171	48	608	321	79	132	41	573	464	80	115	60	719
Entry ratings	2,768	1,338	1,672	1,540	7,318	1,791	1,121	1,531	829	5,272	1,677	971	1,432	454	4,534	2,228	1,411	1,807	1,848	7,294
Tankerman	28	98	15	77	218	30	91	10	69	200	34	91	6	58	189	40	119	12	73	244
Total	6,810	3,081	4,081	3,411	17,373	4,266	2,611	3,575	1,911	12,363	4,087	2,327	3,318	1,105	10,837	5,753	3,501	4,074	3,982	17,310

FIRE PREVENTION WEEK, 1969

By the President of the United States of America

A Proclamation

In an era when technological advancement has brought to our Nation an almost unbelievable array of conveniences and comforts, we still are plagued by the hazard of man's oldest implement for self-preservation—fire. The potential dangers associated with fire still present a real threat to human life and property.

The present level of our annual fire losses—more than 12,000 lives and over $2 billion in property—is a measure of our failure to heed fire hazards and to correct them. It is essential that every citizen recognize that such losses can be avoided, but only by personal involvement, determination, and a realization that fires need not occur.

NOW, THEREFORE, I, RICHARD NIXON, President of the United States of America, do hereby designate the week beginning October 5, 1969, as Fire Prevention Week.

I urge that we, as a Nation and as individual citizens, assume a positive approach to fire prevention through the support of community fire departments, State and local governments, the National Fire Protection Association, business and civic groups, and public organizations that are trying to combat the senseless waste of human life and national resources.

I also urge Federal agencies, through the Federal Fire Council, to initiate and carry on effective fire prevention programs not only for the protection of Government employees and property but also for the betterment of all segments of our society.

IN WITNESS WHEREOF, I have hereunto set my hand this fifth day of August, in the year of our Lord nineteen hundred and sixty-nine, and of the Independence of the United States of America the one hundred and ninety-fourth.

RICHARD NIXON

FIRE PREVENTION FOR ENGINEERS

Needless to say, shipboard fires are extremely dangerous and all steps must be taken to prevent them. As officers, engineers have a special responsibility to prevent fires. Here are some of the things that should be done:

- Keep clean rags and waste in covered bins where a match or cigarette butt can't reach them.
- Keep oily and paint-soaked rags and waste in covered metal containers. Empty them daily.
- Oil-soaked sawdust is also readily ignited and should be swept up as soon as possible and put in covered metal containers which are emptied daily. (Commercial oil absorbents will not support combustion when the source of ignition is removed.)
- Keep ventilating ducts clean of lint and grease. Fires started in ventilating ducts are quickly spread over a large area.
- Dispose of paper, excelsior and other packing materials as soon as stores are broken out.
- Sweep up and dispose of all wood chips and shavings at the end of each day's work.
- Keep light bulbs clean of lint and grease.
- Inspect lockers to see that they do not contain accumulation of oily clothes and other combustibles.
- Keep oil out of bilges, off tank tops and floor plates; never neglect a leak nor put off cleaning up a spill.
- Do not leave fuel oil or other substances used to clean burners around in open buckets.
- Restrict all fusing alterations and other work on electrical circuits to those crew members who are qualified and authorized to do the work.
- Prohibit the running of makeshift extensions; prohibit the operation of resistance type electrical devices except where the type of device has been approved and the location and installation checked for safety.

- In refueling lifeboat motors use UL approved safety can equipped with flexible hose spout *only;* use of open bucket and funnel or syphoning should be prohibited.
- Never attempt to light a burner from a hot furnace wall.
- Before starting welding or burning operations, examine the area beyond the bulkhead or deck plate on which work is to be done to insure that these areas are free of explosive or flammable substances. Any holes or cracks through which sparks or molten metal might fall should be covered.

A fire watch, with a fire extinguisher, must be maintained where welding is being performed. Where it is impossible for one man to observe all areas, an additional fire watch should be stationed opposite the point where the welding is being done.

The surrounding area should be wet down thoroughly. For some time after the work is completed, the area should be thoroughly inspected; beads of molten metal may lodge under combustible material and burst into flame later.

Proper protective equipment is a must. This includes suitable helmet, long sleeved shirt, heavy canvas or asbestos gloves, asbestos sleeves, goggles for chipping slag, etc. Fire watch should have tinted goggles.

Adequate ventilation is imperative. In closed areas provision should be made to supply fresh air and dissipate the fumes. Mechanical blowers are far more effective than natural ventilation.

Oxygen and usually acetylene are used in gas burning and welding. Pure oxygen in contact with grease or oil will ignite it spontaneously. Therefore, oil or grease should not be used to lubricate fittings on oxygen bottles. Valves on acetylene bottles should always be closed at the bottles when the torch is not being used. Acetylene is a very unstable gas with a broad explosive range—2 to 80 percent. "Reverse flow" check valves should be installed on each line. ⚓

Courtesy The Safety Valve

AMENDMENTS TO REGULATIONS

Title 46 Change

Chapter III—Coast Guard (Great Lakes Pilotage), Department of Transportation

PART 401—GREAT LAKES PILOTAGE REGULATIONS

Rates and Regulations

1. On June 4, 1969, a notice of proposed rulemaking regarding amendments to Part 401, Chapter III, Title 46, Code of Federal Regulations, was published in the Federal Register (34 F.R. 8923). In accordance with the notice a public hearing regarding the proposed amendments was held on June 19, 1969, in Cleveland, Ohio. Interested parties were given the opportunity of participating in the rulemaking by submitting written data, views, arguments, or comments regarding the proposed amendments in advance of the hearing date and by submitting this material orally or in writing at the public hearing. All the comments received from interested parties support the restructuring of the rates for pilotage services.

2. After the public hearing, the data, views, arguments, and comments, submitted by interested parties regarding the proposed amendments were thoroughly considered by the representative of the Commandant. Thereafter the representatives of the United States entered into discussions with the representatives of Canada. As a result of these discussions a new Memorandum of Arrangements concerning Great Lakes Pilotage was executed by the Secretary of Transportation and the Minister of Transport. This Memorandum becomes effective August 1, 1969, and commits both parties to the development and implementation of a new rate structure.

3. Certain changes have been made in the amendments proposed in the notice. The proposal to charge detention in undesignated waters has been deferred. This issue will be further considered as a part of the study to restructure the rates. In § 401.400 the charge for some of the voyages on designated waters in District No. 1 has been decreased slightly from the proposed. Also, in § 401.410(a) the charge in the undesignated waters of Lake Ontario has been decreased slightly.

4. One of the comments received at the public hearing on June 19, 1969 indicated a misunderstanding as to the status of the mandatory pilot change points effected by the 1968 amendment to § 401.450. It is generally agreed that these change points should result in a decrease in detention and detention charges. The comment referred to was to the effect that the mandatory change point at Detroit was instituted only on a trial basis for a 60-day period. This is not a fact. To the contrary, all the mandatory change points set forth in § 401.-451 have been established on a permanent basis.

5. Since these amendments involve a foreign affairs function of the United States, they can be made effective in less than 30 days.

6. Subpart B of Part 401 is amended by revising § 401.220(e) to read as follows:

§ 401.220 Registration of pilots.

* * * * *

(e) The Director may, when necessary to assure adequate and efficient pilotage service, issue a temporary certificate of registration for a period of less than 1 year to any person found qualified under this subpart regardless of age.

7. Subpart C of Part 401 is amended by revising § 401.400 to read as follows:

§ 401.400 Rates and charges on designated waters.

Except as provided under § 401.-420, the following rates and charges shall be payable for all services and assignments performed by United States or Canadian Registered Pilots in the following areas of the United States waters of the Great Lakes described in § 401.300, pursuant to the Memorandum of Arrangements, Great Lakes Pilotage:

(a) District 1:

(1) Between Snell Lock and Cape Vincent or Kingston, whether or not undesignated waters are traversed—$282.

(2) Between Snell Lock and Cardinal, Prescott, or Ogdensburg—$141.

(3) Between Cardinal, Prescott, or Ogdensburg and Cape Vincent or Kingston, whether or not undesignated waters are traversed—$205.

(4) For pilotage commencing or terminating at any point above Snell Lock other than those named in items (1), (2), or (3), $2.80 per statute mile but with a minimum charge therefor of—$64.

(5) For a movage in any harbor—$78.

(b) District 2:

(1) Passage through the Welland Canal or any part thereof, $7.75, for each statute mile plus $23 for each lock transited but with a minimum charge of $78 and a maximum charge for a through trip of $310. When pilots are changed at Lock 7 on a through trip the charges are apportioned as follows:

(i) Between northerly limits and Lock 7—$155.

(ii) Between Lock 7 and southerly limits—$155.

(2) Between Southeast Shoal or any point on Lake Erie west thereof and any point on the St. Clair River or the approaches thereto as far as the northerly limit of the District—$234.

When pilots are changed at Detroit/Windsor on a through trip the charges are apportioned as follows:

(i) Between Southeast Shoal or any point on Lake Erie west therof and Detroit/Windsor—$117.

(ii) Between Detroit/Windsor and the northerly limits—$117.

(3) Between Southeast Shoal and any point on Lake Erie west thereof or on the Detroit River—$148.

(4) Between any point on Lake Erie west of Southeast Shoal and any point on the Detroit River—$148.

(5) Between points on Lake Erie west of Southeast Shoal—$78.

(6) Between points on the Detroit River—$78.

(7) Between any point on the Detroit River and any point on the St. Clair River or its approaches as far as the northerly limit of the District—$148.

(8) Between points on the St. Clair River including the approaches thereto as far as the northerly limit of the District—$117.

(c) District 3:

(1) Between the southerly limit of the District and the northerly limit of the District or the Algoma Steel Corp. Wharf at Sault Ste. Marie, Ontario—$302.

(2) Between the southerly limit of the District and Sault Ste. Marie, Mich., or any point in Sault Ste. Marie, Ontario, other than the Algoma Steel Corp. Wharf—$250.

(3) Between the northerly limit of the District and Sault Ste. Marie, Ontario, including the Algoma Steel Corp. Wharf, or Sault Ste. Marie, Mich.—$113.

(4) For a movage in any harbor—$78.

8. Section 401.410 is revised to read as follows:

§ 401.410 Rates and charges on undesignated waters.

(a) Subject to paragraph (b) of this section, the charges to be paid by a ship that has a registered pilot on board in the undesignated waters of Lake Ontario shall be $70 and in other undesignated waters shall be $78 for each 24-hour period or part thereof that the pilot is on board, plus—

(1) $39 for each time the pilot performs the docking or undocking of the ship on entering or leaving a harbor or performs a movage of the ship within a harbor; and

(2) The travel expenses reasonably incurred by a pilot in joining the ship and returning to his base.

(b) When a registered pilot is carried on a ship in a direct transit of the undesignated waters of Lake Erie between Southeast Shoal and Port Colborne, the charges referred to in paragraph (a) are not payable unless—

(1) The ship is required by law to have a registered pilot on board in those waters; or

(2) Services are performed by the pilot in those waters at the request of the Master.

9. Section 401.420 is revised to read as follows:

§ 401.420 Cancellation, delay or interruption in rendition of services.

(a) When the passage of a ship through a District is interrupted for the purpose of loading or discharging cargo or for any other reason and the services of the registered pilot are retained during such interruption, for the convenience of the ship, the ship shall pay an additional charge of $7.75 for each hour or part of an hour during which each interruption lasts, but with a maximum of $117 for each 24-hour period of such interruption. However, there is no charge for any interruption caused by ice, weather, or traffic, except during the period beginning the first day of December and ending on the eighth day of the following April.

(b) When the departure or the movage of a ship for which a registered pilot has been ordered is delayed for the convenience of the ship for more than 1 hour after the pilot reports for duty at the designated boarding point or after the time for which he is ordered, whichever is the later, or when a pilot is detained on board a ship for the convenience of the ship for more than 1 hour after the end of the assignment for which he was ordered the ship shall pay an additional charge of $7.75 for each hour or part of an hour after the first hour of such delay; but the aggregate amount of such further charges shall not exceed $117 for any 24-hour period.

(c) When a registered pilot reports for duty as ordered and the order is canceled, the ship shall pay—

(1) A cancellation charge of $39;

(2) If the cancellation is more than 1 hour after the pilot was ordered for, a further charge of $7.75 for each hour or part of an hour after the first hour, except that the aggregate cancellation fee payable in any 24-hour period shall not exceed $117; and

(3) If the ship is in the undesignated waters, the travel expenses reasonably incurred by the pilot in joining the ship and returning to his base.

(Secs. 4 and 5, 74 Stat. 260, sec. 6(a)(4), 80 Stat. 937; 46 U.S.C. 216b, 216c, 49 U.S.C. 1655(a)(4); 49 CFR 1.4(a)(1))

Effective date. These amendments shall become effective on August 1, 1969.

(Federal Register of August 1, 1969)

STORES AND SUPPLIES

Articles of ships' stores and supplies certificated and canceled from August 1 to August 31, 1969, inclusive, for use on board vessels in accordance with the provisions of part 147 "Regulations Governing Use of Dangerous Articles as Ship's Stores and Supplies on Board Vessels" are as follows:

CERTIFIED

Radiator Specialty Co., P.O. Box 10628, Charlotte, N.C. 28201: Certificate 853, dated July 3, 1969, LIQUID WRENCH.

Stauffer Chemical Co., 299 Park Ave., New York, N.Y. 10017: Certificate 855, dated August 1, 1969, TRIPLE ONE™.

AFFIDAVIT

The following affidavit was accepted during the period from July 15, to August 15, 1969.

E.B.V. Systems, Inc., 235 Kilvert St., Warwick, R.I. 02886 VALVES.[1]

[1] Series 150, 300, 600, 900, and 1500 EFCO Ball Valves only.

MERCHANT MARINE SAFETY PUBLICATIONS

The following publications of marine safety rules and regulations may be obtained from the nearest marine inspection office of the U.S. Coast Guard. Because changes to the rules and regulations are made from time to time, these publications, between revisions, must be kept current by the individual consulting the latest applicable Federal Register. (Official changes to all Federal rules and regulations are published in the Federal Register, printed daily except Sunday, Monday, and days following holidays.) The date of each Coast Guard publication in the table below is indicated in parentheses following its title. The dates of the Federal Registers affecting each publication are noted after the date of each edition.

The Federal Register will be furnished by mail to subscribers, free of postage, for $2.50 per month or $25 per year, payable in advance. The charge for individual copies is 20 cents for each issue, or 20 cents for each group of pages as actually bound. Remit check or money order, made payable to the Superintendent of Documents, U.S. Government Printing Office, Washington, D.C. 20402. Regulations for Dangerous Cargoes, 46 CFR 146 and 147 (Subchapter N), dated January 1, 1969 are now available from the Superintendent of Documents, price: $3.75.

CG No.	TITLE OF PUBLICATION
101	Specimen Examination for Merchant Marine Deck Officers (7–1–63).
108	Rules and Regulations for Military Explosives and Hazardous Munitions (5–1–68).
115	Marine Engineering Regulations and Material Specifications (3–1–66). F.R. 12–6–66, 12–20–67, 6–1–68, 12–18–68.
123	Rules and Regulations for Tank Vessels (5–2–66). F.R. 12–6–66, 12–9–67, 12–27–67, 1–26–68, 1–27–68, 2–10–68, 4–12–68, 6–1–68, 10–2–68, 12–18–68, 12–28–68.
129	Proceedings of the Merchant Marine Council (Monthly).
169	Rules of the Road—International—Inland (9–1–65). F.R. 12–8–65, 12–22–65, 2–5–66, 3–15–66, 7–30–66, 8–2–66, 9–7–66, 10–22–66, 12–23–67, 6–4–68.
172	Rules of the Road—Great Lakes (9–1–66). F.R. 7–4–69.
174	A Manual for the Safe Handling of Inflammable and Combustible Liquids (3–2–64).
175	Manual for Lifeboatmen, Able Seamen, and Qualified Members of Engine Department (3–1–65).
176	Load Line Regulations (1–3–66). F.R. 12–6–66, 1–6–67, 9–27–67, 7–12–68, 6–5–69, 7–26–69.
182	Specimen Examinations for Merchant Marine Engineer Licenses (7–1–63).
184	Rules of the Road—Western Rivers (9–1–66). F.R. 9–7–66, 5–11–67, 12–23–67, 6–4–68
190	Equipment Lists (8–1–68). F.R. 11–7–68, 11–8–68, 11–16–68, 11–19–68, 11–20–68, 12–11–68, 12–18–68, 2–11–69, 2–18–69, 2–21–69, 2–26–69, 3–15–69, 3–27–69, 4–4–69, 4–12–69 4–19–69, 4–25–69, 4–26–69, 4–28–69, 5–3–69, 5–9–69, 6–18–69, 6–19–69, 7–1–69, 7–15–69, 7–17–69.
191	Rules and Regulations for Licensing and Certificating of Merchant Marine Personnel (5–1–68). F.R. 11–28–68.
200	Marine Investigation Regulations and Suspension and Revocation Proceedings (5–1–67). F.R. 3–30–68.
220	Specimen Examination Questions for Licenses as Master, Mate, and Pilot of Central Western Rivers Vessels (4–1–57).
227	Laws Governing Marine Inspection (3–1–65).
239	Security of Vessels and Waterfront Facilities (5–1–68).
249	Merchant Marine Council Public Hearing Agenda (Annually).
256	Rules and Regulations for Passenger Vessels (5–2–66). F.R. 12–6–66, 1–13–67, 4–25–67, 8–29–67, 12–20–67, 1–27–68, 4–12–68, 10–2–68, 12–18–68, 12–28–68.
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266	Rules and Regulations for Bulk Grain Cargoes (5–1–68).
268	Rules and Regulations for Manning of Vessels (5–1–67). F.R. 4–12–68.
293	Miscellaneous Electrical Equipment List (9–3–68).
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323	Rules and Regulations for Small Passenger Vessels (Under 100 Gross Tons) (1–3–66). F.R. 12–6–66, 1–13–67, 12–27–67, 1–27–68, 4–12–68, 11–28–68, 12–18–68, 12–28–68.
329	Fire Fighting Manual for Tank Vessels (7–1–68).

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